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Distribution Of Xylariaceae In The Western Himalayas

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The distribution of *Daldania*, *Hypoxylon*, *Rosellinia*, and *Xylaria* in the Western Himalayas is discussed.

From Western Himalayas, several members of Xylariaceae were collected belonging, to the genera *Xylaria* Hill ex Schrenk, *Hypoxylon* Bull.: Fr. *Rosellinia* de Not. and *Daldinia* Ces. & de Not. The distribution of various species of these genera in the region is presented.

Champion & Seth (1968), recognised 9 floristic regions. The Western Himalayas is one of them. About 100 species of family Xylariaceae from the various localities of Western Himalayas have been collected. The members of Xylariaceae have a preference for the angiospermous hosts in these forests and only a few species have been recorded both on angiospermous and gymnospermous substrata.

Xylariaceae of tropical forests -

The tropical forests are found in the plains and in the adjoining foot hills which may ascend up to 1,000 M above mean sea level (m.s.l.) in the Shivaliks and outer ranges of the Western Himalayas. It includes the areas around Jammu, Pathankot, Dunera, Patiala, Chandigarh, Kalka, Paonta Sahib, Dehra Dun, Rishikesh and Haldwani. Both tropical moist deciduous forests and tropical dry forests occur. The forest floor has dense patches of dead leaves and twigs and also stumps of trees in different stages of decomposition. These form a very suitable substrata for the growth of Xylariaceae. In the tropical moist deciduous forests *Shorea robusta* is a dominant species and occurs in almost pure formation around Dehra Dun and Nainital. At most places, the forests are always mixed and no single species forms a pure crop. Some common trees in this region are *Adina cordifolia* Brandis, *Acacia catechu* Willd., *Dalbergia sisoo* Roxb., *Bombax ceiba* Burme. etc. The areas around Chandigarh, Kalka, Pathankot, Dunera and Jammu comprise tropical dry deciduous forests. Terrestrial Xylarias e.g. *X. nigripes* (Klotzsch) Che. and *X. thyrsus* (Berk.) Fr. are present.

A few wood inhabiting species like *X. coccophora* Mont., *X. grammica* (Mont.) Fr., *X. punjabensis* Dargan & Singh, *Hypoxylon crocopeplum* Berk., & Curt., *H. sclerophaeum* Berk. & Curt., *H. haematostroma* Mont., *Rosellinia sublimata* (Dur. & Mont,) Pess., *R. apiculata* Sacc. Var. *macrospora* Thind & Dargan and *R. thindii* Dargan are restricted in distribution. However, their growth is in abundance in a particular locality they grow. *H. haematostroma* Mont. produces a very prominent reddish-brown cushion shaped stroma with a lot of black spore deposit at maturity. *X. grammica* (Mont.) Fr. was collected only from the pure sal forests of Dehra Dun where it grows so abundantly that almost every decaying stump is inhabited by this fungus. Two new species of *Daldinia* i.e. *D. gramnis* Dargan & Thind and *D. sachhari* Dargan & Thind were collected from the forest around Chandigarh.

X. hypoxylon (L.: Fr.) Grev., *X. mellisii* Berk.) Cke., *X. filiformis* (Alb. & Schw.) Fr., *H.*

rubrostromaticum Mill., *X. rubiginosum* Pers.: Fr., *H. vogesiacum* Pers.: Sacc., *H. deustum* (Hoffm.: Fr.) Grev., *R. apiculata* Sacc. var. *macrospora* Thind & Dargan, *R. aquila* (Fr.) de Not., and *D. concentrica* are frequently observed in the tropical forests but their occurrence is relatively high in the temperate zone.

Xylariaceae of Subtropical forests -

These are represented at Sat Tal, Bhim Tal (Nainital), Xylar

Xa(Ranikhet): Banikhet, Baloon (Dalhousie) and lower altitudes of Dharmsala & Udhampur. These places have mixed type of forests with bushy growth of *Lantana*. *X. feejeensis* (Berk.) Fr., *X. phosphorea* Berk., *H. rubrostromaticum* Mill., *D. caldariorum Henn.* and *D. vernicosa* (Schw.) Ces & de Not. were common in these forests. Two new Xylarias i.e. *X. nainitalensis* Dargan and *X. convoluta* Dargan growing on dead fallen leaves and twigs of *Quercus incana* Roxb. were collected from the subtropical forests of Sat Tal (Nainital). *R. indica* Dargan & Thind was collected from these forests on dead angiospermous stump.

Xylariaceae of Temperate forest -

This montane temperate zone extends from 1,800-3,600 M in this region. The annual rainfall varies considerably and ranges from 1000-3000 mm. The climate is cold in winter with minimum reaching up to (-) 10°C and it is moderately hot in summer. The snowfall is moderate and occurs during the months of December to March.

The forest floor is usually rich in humus and dead decaying leaves and is marked by large number of Xylariaceous species. *X. hypoxylon* (L.: Fr.) Grev., *X. polymorpha* (Pers.: St. Amans) Grev., *X. multiplex* (Kunze) Fr., *X. mellisii* (Berk.) Cke., *H. rubiginosum* Pers.: Fr., *D. concentrica* (Bolt.: Fr.) Ces. & de Not. and *R. aquila* (Fr.) de Not. are widespread. Most species grow on angiospermous hosts and only a few grow on conifers. The prevalence of *X. alpina* Speg. is noticed only in the coniferous forests, where *Picea* is dominant. *X. alpina* Speg. occurred on the dead female cones of *Picea morinda* Link. Another temperate species *R. thelena* (Fr.) Rab., which is always confined to *Abies pindrow* Spach. *R. himalayensis* Dargan & Thind was found on decaying ywigs and needles of *Cedrus deodara.*

Some of the species are restricted to temperate forests and are not found in the tropical or alpine forests of N. W. Himalayas. These are: *X. anisopleura* (Mont.) Fr., *X. trachelina* (Lev.) Lev., *X. longipes* Nits., *H. investiens* (Schw.) Curt., *H. nummularium* Bull.: Fr., and *H. nummularium* Bull.: Fr. var. *rumpens* (Cke.) Mill.

Temperate forests of Narkanda (H.P.) are very rich in *Xylaria.* In the pure *Quercus* forest at the summit of Hattoo mountain, *H. serpens* (Pers.: Fr.) Kickx, *H. multiforme* Fr., *H. caries* (Schw.) Sacc., *H. howeianum* Peck., *H. investiens* (Schw.) Curt. and *X. hypoxylon* (L.:Fr.) Grev. subsp. *adscendens* (Fr.) D. Hawksw. were found luxuriantly.

Other species which are, however, less common in this region are: *X. gracillima* (Fr.) Fr., *H. notatum* Berk. & Curt., *H. hypomiltum* Mont., *H. mullerii* Mill., *H. cohaerens* Pers.: Fr., *H. archeri* Berk., *H. nummularium* Bull.: Fr., *H. nummularium* Bull.: Fr. var. *rumpens* (Cke.) Mill., *R. aquila* (Fr.) de Not., *R. corticum* (Schw.) Sacc., *R. apiculata* Sacc. var. *macrospora* Thind & Dargan, *Daldinia bakeri* Lloyd, *D. concentrica* (Bolt.: Fr.) Ces de Not., *Bolinia lutea* (Alb. & Schw.: Fr.) Mill., *Peridoxylon petersii* (Berk. & Curt.) Shear and *Kertzschamria heliscus* (Mont.) Massee.

Temperate forests of Gulmarg and Pahalgam (J & K) have relatively less representation of Xylariaceae. This, perhaps is due to the predominantly coniferous forests with less angiosperms.

Xylariaceae of alpine forests -

This zone extends above 3600 M. Snowfall is very heavy, winter is severe and summer is short. Rainy period is only during the summer months, July tp September. The vegetation in this zone is "Alpine stony deserts", "Alpine scrub", "Alpine meadows" and "Alpine forests". These extend from 3600 M to the snow line. The vegetation is bushy in habit with short and much branched stems.

There is pracrically little representation of the Xylariaceae in these forests. Alpine zones of Gobind Dham and Hemkunt have forests of *Betula utilis* Don and *Quercus* sp. Few Xylariaceous species e.g. *H. serpen* (Pers.: Fr.) Kickx., *H. multiforme* Fr., and *D. concentrica* (Bolt.: Fr.) Ces. de Not. are found.

There seems to be no definite pattern of distribution of these species on various altitudes. Certain tropical species, sometimes, are also collected from the temperate forests and even from alpine forests. *D. concentrica* (Bolt.: Fr.) Ces. de Not. occurs in the alpine forests.

Certain species were collected only once; e.g. *R. sublimbata* (Dur. & Mont.) Pass. from Chandigarh; *R. mammiformis* (Pers.) Ces. de Not. from Khajjar (Chamba); *R. meddularis* (waltr.) Ces. de Not. from Dalhousie; *X. trachelina* (Lev.) Lev. from Mussoorie and *H. investiens* (Schw.) Curt. from Kulu only.

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